



The Concrete Institute of Australia's Biennial National Conference (Concrete 2013) is being held at the Gold Coast Convention and Exhibition Centre, Queensland, from 16-18 October 2013.

The broad theme of the conference is "Understanding Concrete", covering materials, research, design, construction and innovation. The full technical program has now been released and a copy is provided in the following pages.

The technical program is headed by keynote speakers such as Dr Andy Davids, Prof Mario Sassone and Prof Surendah Shah, who will be backed up by some 100 other technical papers covering a wide range of interesting topics.

Chairman of the technical committee Dr Vinh Dao said: "The diversity of papers in this conference will make it attractive to civil and structural engineers, building and civil contractors and material suppliers, and there will be things of great interest to academics and researchers. Technical staff from state

and local government will find topics of value for their work.

Concrete 2013 will provide a great chance to network with other like-minded professionals and exchange technical information on a more personal level."

#### Keynote speakers

- **Dr Andy Davids**, Aurecon, UAE
- **Professor Mario Sassone**, Department of Architecture and Design, Politecnico di Torino, Italy
- **Professor Surendra Shah**, Walter P. Murphy Professor of Civil Engineering (Emeritus), Centre for Advanced Cement Based Materials, Northwestern University, USA

#### Technical program released

Following the review of all papers the technical committee has released the technical program giving details of the papers to be presented each day. Parallel sessions will be set up so that it is easy for delegates to move between sessions to hear different presentations.

#### Sponsorship opportunities

There are sponsorship packages still available and Ian Bishop the sponsorship chairman says "We are open to negotiation with companies to establish a package that will suit their particular needs. Now that the full technical program is available companies can better assess the likely participation in the conference and its value to their company."

## Concrete 2013 exhibitors

Active Minerals Australia	Hanson	PCTE
Ancon	Hilti	Peikko Australia Pty Ltd
Ash Development Association of Australia	HM Technologies	Penetron
Australian (Iron & Steel) Slag Association	ITW Construction Systems	Peri
BASF Australia Ltd	Krystol Group Pty Ltd	Precast Concrete Pty Ltd
BOSFA	KTI – Plersch	Sika Australia
Concrete Pipe Association of Australia	Lesa Systems	Simpson Strong Tie Australia
Erico	Maccaferri Australia	Synergy Pigments Australia
Freyssinet Australia	Mapei	The Construction Store Pty Ltd
Grace Construction Products	Normet Construction Chemicals	The Reinforced Earth Company
Halcrow (FRGC Consortium)	Parchem Construction Supplies	Xypex

Conference Partner



Gold & Notepad Sponsor



Gold & Notepad Sponsor



Gold Sponsor



Silver Sponsors



Conference Program & Abstract Book Sponsor



Name Badge & Lanyard Sponsor



Pen Sponsor



Barista Sponsor



## Exhibition provides great exposure

Exhibition chairman Gavin Chadbourn indicated that the exhibition spaces are filling up quickly and that he “feels that now the technical program has been finalised, the remaining spaces will be much sought after. Currently we have allocated 49 exhibitions spaces, which, makes this a great contributor to the value of the conference.”

Companies committed to providing exhibitions as at the date of this article preparation are listed in the following pages.

Exhibitors have the opportunity to invite clients from the local region who are not able to attend the conference to visit and inspect their display during the conference period.

## Social program

Concrete 2013 has a welcome function on the Wednesday evening and the gala dinner on the Thursday evening, both of which will be held in the conference venue. These are covered for the delegate by the delegate registration fee, but other members of

staff and family can be registered for an additional fee for those events.

As well as these events there are other opportunities for delegates and families during the conference and on the following weekend.

Social chairman Con Komselis said: “The Gold Coast has wonderful attractions for delegates and their families, and we have been able to secure special entry fee discounts for the major entertainment parks in the region and also for those who love to play golf. These rates will apply to the weekend after the conference, so it is a great chance for delegates to include their family in this trip.”

## Awards for Excellence in Concrete presentations

If your company or organisation has involvement in any of the projects submitted for the Concrete Institute's Awards for Excellence in Concrete then you will be interested in the gala dinner that will be held at the conference. This will include the presentation of the national awards to the projects judged the best in their

category. Companies involved should also consider purchasing tables for the dinner to enable them to bring staff involved and particular clients to see the value of the work done in the award project. This can be done by contacting Arinex as listed below.

## Accommodation

The Gold Coast has a wide range of accommodation available from family units to hotel suites. The conference has organised special rates for delegates at locations within a few minutes walk of the conference venue and these are available through the registration area of the conference website.

## Support your industry conference

Conference chairman Emeritus Professor Peter Dux urges all CIA members to support their organisations major biennial event. He said: “Concrete 2013 is the flagship for the CIA and provides a major national focus for the dissemination of technical information on all aspect of concrete. It affords wonderful opportunities for networking nationally and internationally that are not available

in any other forum on concrete in Australia. It is a major event and a vitally important event for the CIA, and I urge all members to get behind it, support it and attend to ensure that it continues to occupy its rightful position as the pre-eminent event on

concrete in Australia.”

Further conference details and registration information can be found on [www.concrete2013.com.au](http://www.concrete2013.com.au).

Conference Managers:

Arinex Pty Limited

Suite 3, The Precinct,

12 Browning Street

West End, QLD 4101

Ph: +61 7 3226 2800

Fax: +61 7 3226 2899

Email: [concrete2013@arinex.com.au](mailto:concrete2013@arinex.com.au)

Website: [www.concrete2013.com.au](http://www.concrete2013.com.au)

## Technical program at a glance

Wednesday 16 October 2013			
08:00-17:30	Registration		
09:15-09:45	Opening Session		
09:45-10:30	Plenary Session I: <b>Keynote Speaker: Dr Andy Davids</b> Design and Construction of the Current Tallest Buildings in the World – Lessons for the Next Generation		
10:30-11:00	Morning Tea and Exhibition		
11:00-12:30	SESSION 1A Structures Research and Applications	SESSION 1B Concrete Performance at Elevated Temperatures	SESSION 1C Durability
11:00-11:20	<b>Prof. Stephen J. Foster</b> <b>1A-1:</b> Calibration of Reinforced Concrete Structures Standard AS3600-Part I: Statistical Analysis of Material Properties and Model Error		<b>Dr Faiz U.A. Shaikh</b> <b>1C-1:</b> Corrosion Durability of Geopolymer Concretes Containing Different Concentrations of Alkaline Solution
11:20-11:40	<b>Prof. Mark G Stewart</b> <b>1A-2:</b> Calibration of Reinforced Concrete Structures Standard AS3600-Part II: Reliability Indices and Changes to Capacity Reduction Factors	<b>Mr James M. de Burgh</b> <b>1B-2:</b> Fire induced Spalling of Reinforced or Prestressed Concrete - Overview and Initial Numerical Investigation	<b>Mr B. Tom Benn</b> <b>1C-2:</b> Chloride Ion Ingress of Concrete – the Influence of Increased Levels of Limestone Mineral Addition
11:40-12:00	<b>Mr Sing-Siu Michael Lee</b> <b>1A-3:</b> Sustainable Composite Beam Behaviour with Deconstructable Bolted Shear Connectors-Full scale Experimental Investigation	<b>Mr A.Q. Sobia</b> <b>1B-3:</b> The Effect of Elevated Temperature on HAC-based THPCC with GGBS Addition	<b>Mr Laurence Aldridge</b> <b>1C-3:</b> Service Life of Concrete during Chloride Ingress
12:00-12:20	<b>Mr Huigyeong Kim</b> <b>1A-4:</b> Investigating the Structural Behaviour of Concrete Filled ‘CAN’ Under Axial Loading	<b>1B-4:</b> TBC	<b>Mr Fred Andrews-Phaedonos</b> <b>1C-4:</b> Use of Corrosion Monitoring Sensors to Monitor the In-Situ Performance and Intervention needs in Reinforced Concrete Structures
12:20-12:30	10-minute Q&A	10-minute Q&A	10-minute Q&A
12:30-13:30	Lunch and Exhibition		
13:30-15:00	SESSION 2A Structures Research and Applications	SESSION 2B Construction Methods	SESSION 2C Concrete Materials and Performance
13:30-13:50	<b>Prof. Mark A. Bradford</b> <b>2A-1:</b> Structural Modelling of Pavement Upheaval Buckling	<b>Mr Reuben F. Barnes</b> <b>2B-1:</b> Unique Ultrasonic Testing System for the Inspection and Diagnosis Concrete Defects and Embedments	<b>Prof. Peter Waldron</b> <b>2C-1:</b> Re-using Steel Wire from Tyres for Fibre Reinforced Concrete
13:50-14:10	<b>Mr Vincent CW Lee</b> <b>2A-2:</b> Three-dimensional Concrete Structure-Soil Interactive Effects	<b>Mr Bassam Matty</b> <b>2B-2:</b> Cockburn Gateway Stage 3 – Top-Down Construction	<b>Dr Rasiah Sri Ravindraraiah</b> <b>2C-2:</b> Quality Assurance for Railway Shotcreting
14:10-14:30	<b>Mr Brendan Cassels</b> <b>2A-3:</b> Design of Ground Bearing Trackform for the Gold Coast Light Rail, QLD, Australia	<b>Mr Harun Meer</b> <b>2B-3:</b> Non-destructive Evaluation of Defects in Reinforced Concrete Using Ground Penetrating Radar (GPR)	<b>Mr Marcin Wieloch</b> <b>2C-3:</b> Self-Compacting Concrete Use in Bridge Transfer Beams
14:30-14:50	<b>Mr Claus Rotstein</b> <b>2A-4:</b> Finite Element Modelling of Ventilation Control Devices for Underground Coal Mines using Engineered Cementitious Composites	<b>Mr Saeko Tokuomi</b> <b>2B-4:</b> An Impact Acoustic System for Concrete-Wall-Climbing Robots -Impact Acoustic System for Rising Cross II-	<b>Mr Stuart Curtis</b> <b>2C-4:</b> Concrete Placing Practice for Durability in Concrete Structures (Adapting Yesterday's Skills for Tomorrow's Challenges)
14:50-15:00	10-minute Q&A	10-minute Q&A	10-minute Q&A
15:00-15:30	Afternoon Tea and Exhibition		
15:30-17:20	SESSION 3A Geopolymer Concrete	SESSION 3B Precast Concrete	SESSION 3C Major Projects/ Case Studies
15:30-15:50	<b>Dr David W. Law</b> <b>3A-1:</b> Properties of Brown Coal Fly Ash Geopolymer Mortars	<b>Mr Rod Bligh</b> <b>3B-1:</b> Development of Geopolymer Precast Floor panels for the Global Change Institute at University of Queensland	<b>Mr Liam Donnelly</b> <b>3C-1:</b> Concrete Challenges on the Superway
15:50-16:10	<b>Mr Pradip Nath</b> <b>3A-2:</b> Development of Fly Ash Based Geopolymer Concrete for Ambient Curing Condition	<b>Mr Mosleh Tohidi</b> <b>3B-2:</b> An Improved Tie Force Method for Progressive Collapse Resistance Design of Precast Concrete Cross Wall Structures	<b>Mr Joyce Lee</b> <b>3C-2:</b> The Design of Eclipse Tower, Parramatta
16:10-16:30	<b>Dr James M Aldred</b> <b>3A-3:</b> Engineering Properties of a Proprietary Premixed Geopolymer Concrete	<b>Mr Geoff. Barker</b> <b>3B-3:</b> Concrete in Remote Housing Construction: Precast Concrete Slabs and Other Applications	<b>Mr Joseph Donohue</b> <b>3C-3:</b> Design and Construction Issues of the Soft-Eye Headwall for Brisbane AirportlinkM7's 12.48m Diameter Tunnel Boring Machines
16:30-16:50	<b>Mr Partha Sarathi Deb</b> <b>3A-4:</b> Sulphate Resistance of Slag Blended Fly Ash Based Geopolymer Concrete		<b>Mr Craig Mills</b> <b>3C-4:</b> New Farm RiverWalk Replacement
16:50-17:10	<b>Mr Yifei Cui</b> <b>3A-5:</b> Bond Performance of Steel Bar and Fly Ash Based Geopolymer Concrete	<b>3B-5:</b> TBC	<b>Mr Fred Andrews-Phaedonos</b> <b>3C-5:</b> Performance of Epoxy Coating on Columns Exposed to Aggressive Tidal Marine Conditions
17:10-17:20	10-minute Q&A	10-minute Q&A	10-minute Q&A
18:30-20:30	Welcome Reception		

## Thursday 17 October 2013

08:00-17:30	Registration		
08:40-10:30	<b>SESSION 4A</b> Geopolymer Concrete	<b>SESSION 4B</b> Repair and Retrofitting	<b>SESSION 4C</b> Design/Structural Engineering: Cast-in anchors
08:40-09:00	<b>Prof. Marita L. Berndt</b> <b>4A-1:</b> Overcoming Barriers to Implementation of Geopolymer Concrete	<b>Prof. Scott T. Smith</b> <b>4B-1:</b> Enhancing the Efficiency of FRP Strengthening Systems	<b>A.Prof. Stuart Reid</b> <b>4C-1:</b> Reliability of Lifting Inserts for Tilt-Up Concrete Construction
09:00-09:20	<b>Mr Chandana Kulasuriya</b> <b>4A-2:</b> Properties of Alkali Pozzolan Cement (APC)	<b>Mr Muhammad Ikramul Kabir</b> <b>4B-2:</b> Retrofitting of Damaged Concrete Beams with CFRP	<b>Mr David J. Heath</b> <b>4C-2:</b> Guidelines for Prequalification and Design of Post-Installed and Cast-In Anchors in Australia
09:20-09:40	<b>Dr Zuhua Zhang</b> <b>4A-3:</b> Efflorescence: A Critical Challenge for Geopolymer Applications?	<b>Dr R.J. Gravina</b> <b>4B-3:</b> Bond Performance of FRP to Concrete Using Vacuum and Heat/resin Injection	<b>Mr Ian Ferrier</b> <b>4C-3:</b> Performance & Ductility of Cast-In Plate Connections
09:40-10:00	<b>Mr Pradip Nath</b> <b>4A-4:</b> Effect of Alkaline Activator Properties on the Fly Ash Based Geopolymer Concrete for Ambient Curing Condition	<b>Dr Johan Kloppe</b> <b>4B-4:</b> Deck Replacement for Fixed Linkspan Bridge at Port Marlborough Interisland Ferry Terminal	<b>Mr Ian Ferrier</b> <b>4C-4:</b> Cast-in Ferrule Connections Load/Displacement Characteristics in Shear
10:00-10:20	<b>Mr Kamal Neupane</b> <b>4A-5:</b> Mechanical Properties of Geopolymer Concrete: Applicability of Relationships Defined by AS 3600	<b>Mr Ronald Lumantarna</b> <b>4B-5:</b> Overview on the Strengthening of New Zealand's Unreinforced Masonry Buildings Using Engineered Cementitious Composite (ECC) Shotcrete	<b>Mr Zac Bouchabake</b> <b>4C-5:</b> Concrete Splitting for Rebars Post-installed with High Bond Adhesives – AS3600 implementation
10:20-10:30	10-minute Q&A	10-minute Q&A	10-minute Q&A
10:30-11:00	Morning Tea and Exhibition		
11:00-12:30	Plenary Session II: <b>Keynote Speaker: A. Professor Mario Sassone</b> <b>2 selected students' papers</b>		
12:30-13:30	Lunch and Exhibition		
13:30-15:00	<b>SESSION 5A</b> Fibres/FRP Research and Applications	<b>SESSION 5B</b> Structures Research and Applications	<b>SESSION 5C</b> Major Projects/ Case Studies
13:30-13:50	<b>Prof. Riadh Al-Mahaidi</b> <b>5A-1:</b> Experimental and Numerical Investigation of Patch Anchors used to Enhance the Performance of FRP Laminates in Concrete Structures	<b>Dr Natalie A Lloyd</b> <b>5B-1:</b> Early Age Tensile and Compressive Strength of Concrete – Impact on Predictions for Anchor Pull-out Capacity	<b>Mr Colin Beall</b> <b>5C-1:</b> Queen Elizabeth II Courts of Law Brisbane
13:50-14:10	<b>A.Prof. Muhammad N.S. Hadi</b> <b>5A-2:</b> Behaviour of Modified RC Columns Retrofitted with CFRP	<b>Mr Wolfgang Merretz</b> <b>5B-2:</b> Development and Use of 1200 mm Diameter Round Panel Test for Substantially Reduced Variability in Quality Control Testing of SFRC Used in Pre-cast Tunnel Lining Segments	<b>Mr Chrysanthos Maraveas</b> <b>5C-2:</b> The New, Balanced Cantilever, Bridge over Acheloos River in Greece
14:10-14:30	<b>Mr Joel Brown</b> <b>5A-3:</b> The Study of FRP Strengthening of Concrete Structures to Increase the Serviceable Design Life in Corrosive Environments	<b>Mr William Buswell</b> <b>5B-3:</b> Pile Cap Design Using Strut-and-Tie Modelling	<b>Mr Scott Rackley</b> <b>5C-3:</b> Testing the Limits: Heavy Floor and Reaction Wall at the Advanced Engineering Building, The University of Queensland, Design and Construction Challenges
14:30-14:50	<b>Mr Nassim Ghosni</b> <b>5A-4:</b> Evaluation of Structural Behaviour of Polypropylene Fibre Reinforced Concrete Beam under Cyclic Loading	<b>Mr Md Mahfuzur Rahman</b> <b>5B-4:</b> Behaviour of Simply-Supported Reinforced Concrete Slabs: An Experimental Study at Service Conditions	<b>Mr Evelyn Storey</b> <b>5C-4:</b> Cyclotron Bunker at the Centre of Advanced Imaging, University of Queensland - Design and Construction Challenges
14:50-15:00	10-minute Q&A	10-minute Q&A	10-minute Q&A
15:00-15:30	Afternoon Tea and Exhibition		
15:30-17:00	<b>SESSION 6A</b> Sustainability	<b>SESSION 6B</b> Early-age Concrete and Cracking	<b>SESSION 6C</b> Structures Research and Applications
15:30-15:50	<b>Mr Des Chalmers</b> <b>6A-1:</b> Progress with Sustainable Cements	<b>Dr James Mackechnie</b> <b>6B-1:</b> Optimizing the Fresh Properties of Concrete by Understanding Rheology	<b>Dr John M Fenwick</b> <b>6C-1:</b> What Risks Are YOU Willing to Take with Steel Quality?
15:50-16:10	<b>Mr Yew-Chin Koay</b> <b>6A-2:</b> An Overview Sustainable Cementless Concrete: The VicRoads Experience	<b>Mr Rodney Paull</b> <b>6B-2:</b> Concrete Thermal/Restraint and Shrinkage Crack Risk – Case Study Design to Construction Feedback	<b>Mr Con Komselis</b> <b>6C-2:</b> Class N Engineered Mesh – Advantages and Application
16:10-16:30	<b>Mr Mayuri Wijayasundara</b> <b>6A-3:</b> Cost-benefit Analysis of Recycled Concrete Aggregate in Structural Concrete	<b>Dr James Aldred</b> <b>6B-3:</b> Thermal Control of Large Concrete Elements – Queensland Experience	<b>Mr Scott Munter</b> <b>6C-3:</b> Recent Developments in the Design and Construction of Concrete Structures incorporating Low-Ductility Steel Reinforcement
16:30-16:50	<b>Mr Mike Haigh</b> <b>6A-4:</b> Development of New High Performance Supplementary Cementitious Material – A Lithium Production By-product	<b>Dr Vinh Dao</b> <b>6B-4:</b> Crack Propagation in Concrete at Early Ages	<b>Mr Andrew McFarland</b> <b>6C-4:</b> Longitudinal Slip Characteristics of Reinforcing Bar Splices
16:50-17:00	10-minute Q&A	10-minute Q&A	10-minute Q&A
19:00-23:00	Gala Dinner		



Friday 18 October 2013			
08:00-15:30	Registration		
09:00-10:30	<b>SESSION 7A</b> Structural Monitoring and Assessment	<b>SESSION 7B</b> Concrete Materials and Performance	<b>SESSION 7C</b> Structures Research and Applications
09:00-09:20	<b>Mr Doug Jenkins</b> <b>7A-1:</b> Structural Ratchet Mechanisms, Ancient and Modern	<b>Mr W.A. Thomas</b> <b>7B-1:</b> Australian Industry Alkali Silica Reactivity Management Program	<b>Prof. Manicka Dhanasekar</b> <b>7B-1:</b> State-of-the-art of the Australian Thin Bed Concrete Structural Masonry
09:20-09:40	<b>Dr Joe Gamman</b> <b>7A-2:</b> New Zealand's Networked Infrastructure Project: Creating an Open Demonstration Site for Smart Infrastructure	<b>Mr Peter Clarke</b> <b>7B-2:</b> Revision of Australian Standard AS 2758.1 Rock and aggregate for engineering purposes – Part 1 Concrete Aggregates	<b>Dr Li-Tze Soh</b> <b>7B-2:</b> The Revised Capacity Reduction Factors for Unreinforced Masonry in Axial Compression in AS3700 – 2011 Practical Methods for the Analysis of Differential Strain Effects
09:40-10:00	<b>Mr Martin Larisch</b> <b>7A-3:</b> Performance Control Tests and Numerical Simulations for Concrete in Deep Foundations	<b>A.Prof. Yan Zhuge</b> <b>7B-3:</b> The Performance of Recycled and Quarry Aggregates and Their Effect on Permeable Concrete	<b>Mr Doug Jenkins</b> <b>7B-3:</b> Practical Methods for the Analysis of Differential Strain Effects
10:00-10:20	<b>Mr Eva O.L. Lantsoght</b> <b>7A-4:</b> Applying Experimental Results to the Shear Assessment Method for Solid Slab Bridges	<b>Dr Dina M. Sadek</b> <b>7B-4:</b> Effect of Curing Conditions on the Behavior of Structural Lightweight Aggregate Concrete	<b>Dr Weena Lokuge</b> <b>7B-4:</b> Effect of Strain Rate on Geopolymer Concrete
10:20-10:30	10-minute Q&A	10-minute Q&A	10-minute Q&A
10:30-11:00	Morning Tea and Exhibition		
11:00-12:30	<b>SESSION 8A</b> Fibres/FRP Research and Applications	<b>SESSION 8B</b> Concrete Materials and Performance	<b>SESSION 8C</b> Creep and Shrinkage
11:00-11:20	<b>Mr Leigh D Appleyard</b> <b>8A-1:</b> Steel Fibre Reinforced Concrete in Australia, 2013	<b>Mr Mohammadreza Hassani</b> <b>8B-1:</b> Assessment of Watertight Concrete and Role of Chemical Admixtures	<b>Prof. Ian Gilbert</b> <b>8C-1:</b> Time-dependent Deflection of Continuous Composite Concrete Slabs
11:20-11:40	<b>Mr Amin Noushini</b> <b>8A-2:</b> Effect of Polyvinyl Alcohol (PVA) Fibre on Flexural Properties of Fibre Reinforced Concrete	<b>Dr Weena Lokuge</b> <b>8B-2:</b> Comparative Assessment of Polymer Concrete with Different Types of Resin	<b>Prof. Robert F Warner</b> <b>8C-2:</b> Simplified Analysis of Creep and Shrinkage in Prestressed Concrete Beams
11:40-12:00	<b>Mr Abolfazl Eslami</b> <b>8A-3:</b> An Experimental Investigation on Flange Bonded Retrofitting of RC Beam-Column Joints using CFRP	<b>Dr Eva Vejmelková</b> <b>8B-3:</b> Effect of Natural Zeolite as Partial Replacement of Portland Cement on Concrete Properties	<b>Mr Alireza Gholamhoseini</b> <b>8C-3:</b> The Effects of Creep and Shrinkage on the Bond-Slip Characteristics and Strength of Composite Concrete Slabs
12:00-12:20	<b>Mr Junlei Zhang</b> <b>8A-4:</b> Mechanisms of Bond Failure between Existing Concrete and Sprayed Polymer Cement Mortar with CFRP Grid by Acoustic Emission	<b>Dr Rabin Tuladhar</b> <b>8B-4:</b> Durability of Concrete with Stone-Dust as a Partial Cement Replacement	<b>Mr Bob Bornstein</b> <b>8C-4:</b> Laboratory Assessment of Drying Shrinkage of Concretes Containing Shrinkage Reducing Agents Compared with a New Low shrinkage Concrete
12:20-12:30	10-minute Q&A	10-minute Q&A	10-minute Q&A
12:30-13:30	Lunch and Exhibition		
13:30-15:00	Plenary Session III: <b>Keynote Speaker: Professor Surendra Shah</b> Controlling Properties of Concrete through Nanomodification <b>Dr Ahmad Shayan</b> Field Application of Geopolymer Concrete: A Measure towards Reducing Carbon Dioxide Emission <b>Mr Lucas Wise</b> Design and Construction of the South Road Superway		
15:00-15:30	Closing Ceremony (with Afternoon Tea and Exhibition)		

## Delegate registration is still open

Registration for Concrete 2013 is now open and can be made via the conference website [www.concrete2013.com.au](http://www.concrete2013.com.au).

There are many categories of registration and there are discounts available to all levels of CIA membership, as well as reduced fee options available to academics, retired professionals and students. Special rates are also available for young industry professionals (under 30 years of age). Day registration is also available for delegates who are unable to attend the whole conference but who have a particular interest in certain papers or keynote speakers.

Exhibitors will also have the opportunity to invite clients from the local region who are not able to attend the conference to visit and inspect

their display during the conference period. Additional exhibition visitor

passes can be purchased by emailing [concrete2013@arinex.com.au](mailto:concrete2013@arinex.com.au).



# Conference Proceedings

**ISBN:** 978-1-877040-73-3

**Proceedings Editors:** Dr Vinh Dao and Emeritus Professor Peter Dux

**Technical Reviewers:**

James Aldred	Ian Gilbert	Wayne Roberts
Riadh Al-Mahaidi	Rebecca Gravina	Hamid Ronagh
Fred Andrews-Phaedonos	Muhammad Hadi	Jeevan Senthilvasan
Daksh Baweja	Doug Jenkins	Sujeeva Setunge
David Beal	David Law	Warren South
Marita Berndt	Con Komselis	Mark Stewart
Ian Bishop	Weena Lokuge	Tony Thomas
Gavin Chadbourn	Peter Morris	Rabin Tuladhar
Des Chalmers	Sherard Northey	Lex Vanderstaay
Luc Dao	Liza O'Moore	Jannie S.J. van Deventer
Vinh Dao	Mike Papillo	Robert Warner
Manicka Dhanasekar	Indu Patnaikuni	Joe Wyche
Peter Dux	Ross Pritchard	Shengjun Zhou
Steve Evans	Gianluca Ranzi	Yan Zhuge
John Fenwick	Stuart Reid	